PERMIT APPLICATION REVIEW
COVERED/TEMPORARY COVERED SOURCE PERMIT (CSP) NO. 0703-01-C/CT
Renewal Application No. 0703-02 and Significant Modification Application No. 0703-03

Applicant: Sphere, LLC dba Pacific Aggregate

Location: 1) 87-601 Paakea Road, Waianae, Oahu (stationary sand plant)
2) Various Temporary Sites, State of Hawaii (various equipment)

Mailing Address: 87-601 Paakea Road
Waianae, Hawaii 96792

Equipment:

The facility consists of the following equipment:

a. 200 ton per hour (TPH) fixed sand plant with:

i. 200 TPH Pettibone hammermill crusher, model no. 3640, 1961;
ii. 504 TPH Kolberg two-deck screen (6' x 12');
iii. 60 TPH Stedman cagemill crusher, model no. 50 (F50D4-47), serial no. D-3553, 2006;
iv. 240 TPH Eljay screen (6' x 16'), serial no. 993, 2004;
v. 1,385 hp/1,033 kW Cummins diesel engine generator, model no. KTA-3067-G-2, serial no. 33112241, 1987;
vi. 775 hp/500 kW Caterpillar emergency back-up diesel engine generator, model no. D348 36 J, serial no. 36J-555;
vii. Various conveyors; and
viii. Various water spray systems.

b. Temporary portable sand plants with:

i. 500 TPH CEC two-deck screen, serial no. 89328, 1990;
ii. 500 TPH CEC two-deck screen, serial no. 89329, 1990;
iii. *150 TPH RSTI trommel screen, model T-620-E, serial no. T-94-08, 1960's;
iv. *150 TPH KPI twin washer, model 5036-25 T KPI, serial no. 410134, 2009;
v. *429 hp/320 kW Caterpillar diesel engine generator, model no. 3406DI, serial no. 2WB01105 (Nonroad), 1984, 24.2 gal/hr;
vi. Various conveyors; and
vii. Various water spray systems

.

* Equipment added with application for significant modification no. 0703-03.

Responsible Official: Mr. Lawerence E. Wilderman
Title: President
Company: Sphere, LLC dba Pacific Aggregate
Address: 87-601 Paakea Road
Waianae, Hawaii 96792
Phone: (808) 668-9582

PERMIT BACKGROUND

Sphere, LLC dba Pacific Aggregate has applied for a significant modification to the covered/temporary covered source permit to operate a trommel screen, twin washer, and 429 HP diesel engine generator as temporary equipment. The facility's primary operation is to mine coral and process the coral into sand. The stationary sand plant, located at 87-601 Paakea Road in Waianae, is not anticipated to be moved during the five year permit term. The applicant requests the option to move some equipment to various temporary sites. The applicant indicated that the equipment added from this modification may be moved to other locations and a 2,500 hour per year operating limit was proposed.

The modification incorporates the addition of the following equipment: wet trommel screen, wet twin washer, and 429 hp diesel engine (Nonroad). This equipment will be operated as a temporary source.

PROCESS BACKGROUND

Process: SICC 1429 (Crushed and Broken Stone, Not Elsewhere Classified).

AIR POLLUTION CONTROLS

Water suppression will be used as necessary to control fugitive dust.

a. Crushing and screening operations are equipped with a water spray systems to abate fugitive dust.

b. A water truck is used to control fugitive dust emissions for each work site.

c. A shroud and enclosures were observed for controlling fugitive dust at hoppers and conveyor discharge point.

d. The trommel screen and twin washer are wet operations.

APPLICABLE REQUIREMENTS

Hawaii Administrative Rules (HAR)
Title 11 Chapter 59, Ambient Air Quality Standards
Title 11 Chapter 60.1, Air Pollution Control
- Subchapter 1 - General Requirements
- Subchapter 2 - General Prohibitions
  - 11-60.1.31 Applicability
  - 11-60.1-32 Visible Emissions
  - 11-60.1-33 Fugitive Dust
  - 11-60.1-38 Sulfur Oxides from Fuel Combustion
- Subchapter 5– Covered Sources
- Subchapter 6 - Fees for Covered Sources, Noncovered Sources, and Agricultural Burning
  - 11-60.1-111 Definitions
  - 11-60.1-112 General Fee Provisions for Noncovered Sources
  - 11-60.1-113 Application Fees for Noncovered Sources
  - 11-60.1-114 Annual Fees for Noncovered Sources
- Subchapter 10 – Field Citations

40 Code of Federal Regulations (CFR) Part 60, Subpart OOO - Standards of Performance for Non-metallic Mineral Processing Plants. It was determined that equipment at the facility is subject to 40 Code of Federal Regulations (CFR) Part 60, Subpart OOO based on manufacturer's information that indicated the capacity of the hammermill crusher to be greater than 150 tons per hour. As indicated in 40 CFR Part 60, Subpart OOO, affected units are those manufactured after August 31, 1983. Although the primary hammermill crusher is exempt from the federal standard based on its manufacturing date that is prior to 1983, 40 CFR Part 60, Subpart OOO is applicable to other equipment because; (1) the equipment was manufactured after 1983, (2) the units operate at the same site as the primary crusher, and (3) the primary crusher's rated capacity is greater than 150 tons per hour. The trammel screen and twin washer are wet operations and are not applicable to subpart OOO.

40 CFR Part 60 – NSPS, Subpart IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines **does not apply** to the existing diesel engine generators. The diesel engines generators were manufactured prior to 2006 The 429 HP diesel engine generator is a nonroad engine. Subpart IIII applies to engines that are not nonroad engines.

40 CFR Part 63, Subpart ZZZZ, National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines is **applicable** to the 1,385 HP and the 775 HP diesel engine generators, as ZZZZ existing engines, since they will be operated as stationary engines. The 775 HP diesel engine generator will be further operated as an emergency stationary RICE, any stationary reciprocating internal combustion engine that meets all of the criteria in paragraphs (a) through c) of this definition. All emergency stationary RICE must comply with the requirements specified in §63.6640(f) in order to be considered emergency stationary RICE. If the engine does not comply with the requirements specified in §63.6640(f), then it is not considered to be an emergency stationary RICE under this subpart.

a. The stationary RICE is operated to provide electrical power or mechanical work during an emergency situation. Examples include stationary RICE used to produce power for critical networks or equipment (including power supplied to portions of a facility) when electric power from the local utility (or the normal power source, if the facility runs on its own power production) is interrupted, or stationary RICE used to pump water in the case of fire or flood, etc.

b. The stationary RICE is operated under limited circumstances for situations not included in paragraph (1) of this definition, as specified in §63.6640(f).

c. The stationary RICE operates as part of a financial arrangement with another entity in situations not included in paragraph (1) of this definition only as allowed in §63.6640(f)(2)(ii) or (iii) and §63.6640(f)(4)(i) or (ii).

The 429 HP diesel engine generator is **not subject to Subpart ZZZZ** because it will be operated as a nonroad engine as defined in 40CFR§1068.30. Subpart ZZZZ applies to stationary internal combustion engines that that are not nonroad engines.

This source is **not subject to NESHAPS** (National Emission Standards for Hazardous Air Pollutants for Source Categories) (40CFR Part 61) as no hazardous air pollutants are emitted at major levels (≥ 10 TPY single hap or ≥ 25 TPY for total haps) and this source is not listed under 40 CFR Part 61 (National Emission Standards for Hazardous Air Pollutants).

This source is **not subject to PSD** (Prevention of Significant Deterioration) requirements because it is not a major stationary source as defined in 40 CFR 52.21 and HAR Title 11, Chapter 60.1, Subchapter 7.

This source is **not subject to CAM** (compliance assurance monitoring) since the proposed equipment is not classified as a major source (criteria pollutant > 100 TPY); has no pre-control device potential emissions exceeding applicable major source thresholds; nor fitted with an "active" air pollution control device; and not or not part of a facility with total emissions exceeding major source threshold.

This source is **not subject to AERR** (Air Emissions Reporting Requirements) since 40 CFR Part 51, Subpart A – Emissions Inventory Reporting Requirements, determines AERR based on potential facility wide emissions of each air pollutant at the AERR triggering levels. The emissions do not exceed respective AERR threshold levels.

The Clean Air Branch requests annual emissions reporting from those facilities that have facility wide emissions exceeding the DOH reporting level(s) and for all covered sources. Annual emissions reporting will be **required** because this is a covered source.

This source is **not subject to a BACT** (Best Available Control Technology) analysis because BACT is required for new covered sources or modifications to covered sources that have the potential to emit or increase emissions above significant levels as defined in HAR §11-60.1-1. Potential emissions from adding the 429 HP diesel engine generator, trommel screen, and twin washer to the existing permit are below significant levels. Therefore, a BACT analysis is not required for this permit renewal and modification

A synthetic minor source is a facility that is potentially major as defined in HAR 11-60.1-1, but is made non-major through federally enforceable permit conditions. This facility **is a synthetic minor source** because potential emissions exceed major source thresholds when the facility is operated at its maximum capacity continuously for 8,760 hours per year.

INSIGNIFICANT ACTIVITIES

a. Two (2) 66 hp Deutz diesel engines servicing the 500 TPH portable screening plants are insignificant activities in accordance with HAR §11-60.1-82(f)(2).

b. One (1) 200 gallon above ground diesel storage tank is an insignificant activity pursuant to HAR §11-60.1-82(f)(1).

ALTERNATIVE OPERATING SCENARIOS (AOS)

The permit will allow the temporary replacement of a diesel engine with another unit of same size or smaller than the primary unit with equal or lower emissions.

PROJECT EMISSIONS

150 TPH Wet Sand Plant

Emissions were assumed to be negligible due to wet material conditions of the equipment. Total facility emissions are summarized in the table below.

429 HP Diesel Engine Generator Emissions

Emissions for NO_X, CO, VOC, PM, PM_{10}, $PM_{2.5,}$ and HAPs were based on emission factors from AP-42, Section 3.3 (10/96), Gasoline And Diesel Industrial. A mass balance calculation was used to determine SO_2 emissions based on the maximum allowable fuel sulfur content of 0.0015% by weight and maximum fuel consumption for the unit at 100% load. It was assumed that ninety-six percent (96%) of the total particulate was PM_{10} and ninety percent (90%) of the total particulate was $PM_{2.5}$ based on AP-42, Appendix B.2, Table B.2-2 for gasoline and diesel fired internal combustion engine generators. An operation limit of 2,500 hours per year was assumed for the diesel engines. Emission estimates are summarized below.

429 HP Diesel Engine Generator (TPY)			
Pollutant	Emissions (2,500 hr/yr Limits)	Emissions (No Limits)	BACT Significant Level
CO	3.94	13.8	100
NO_X	18.3	64.1	40
SO_2	0.0064	0.023	40
PM	0.43	1.51	25
PM-10	0.42	1.45	15
PM-2.5	0.39	1.36	-
VOC	1.49	5.23	40
HAPs	0.027	0.093	-

Existing 1385 HP and 775 HP Diesel Engine Generators Emissions

Emissions of NO_X, CO, VOC, PM, PM_{10}, $PM_{2.5}$, and HAPs from the diesel engine generators were based on emission factors from AP-42, Section 3.4 (10/96), Large Stationary Diesel and All Stationary Dual-fuel Engines. A mass balance calculation was used to determine SO_2 emissions based on the maximum allowable fuel sulfur content of 0.5% by weight and maximum fuel consumption for the unit at 100% load. It was assumed that ninety-six percent (96%) of the total particulate was PM_{10} and ninety percent (90%) of the total particulate was $PM_{2.5}$ based on AP-42, Appendix B.2, Table B.2-2 for gasoline and diesel fired internal combustion engine generators. An operation limit of 2,500 hours per year was assumed for the diesel engines. Emission estimates are summarized below.

DIESEL ENGINE GENERATORS						
Pollutant	Engine Emission Rate				Engine Generator Emissions (TPY)	
	1,033 kW/1,385 hp		500 kW/775 hp		1,033 kW/1,385 hp Diesel Engine Generator (worst-case)	
	lb/hr	g/s	lb/hr	g/s	2,500 hours	8,760 hours
SO_2	4.81	0.607	4.49	0.567	6.0	21.0
NO_X	29.95	3.781	27.93	3.527	37.4	131.0
CO	7.96	1.004	7.42	0.937	9.9	34.7
VOC	-------	-------	0.79	0.099	1.1	3.9
PM	0.94	0.118	0.87	0.110	1.2	4.2
PM_{10}	0.90	0.113	0.84	0.106	1.1	3.9
$PM_{2.5}$	0.84	0.106	0.79	0.099	1.1	3.9
HAPs	-------	------	------	-------	0.018	0.063

Existing Crushing and Screening Equipment

Particulate emissions from the crushing and screening equipment were based on emission factors from AP-42, Section 11.19.1 (8/04), Crushed Stone Processing and Pulverized Mineral Processing. The controlled emission factors were used for crushing, screening, and conveyor transfer points. It was assumed that fifty-one percent (51%) PM was PM_{10} and fifteen percent (15%) PM was $PM_{2.5}$ based on information from AP-42, Appendix B.2.2. Uncontrolled emission factors were used for truck loading and unloading operations because there are no emission factors for these operations with controls. The uncontrolled emission factor was used for truck loading and unloading operations and a 70% control efficiency for water sprays was applied to determine emissions. A 2,500 hr/yr operation limit was applied to determine emissions from the equipment. A total combined 2,500 hr/yr operating limit was used for the two 500 TPH portable screening plants. The rated capacity of the equipment was used to determine maximum potential emissions. Emissions are shown in Enclosure (3) and summarized below.

CRUSHING AND SCREENING EQUIPMENT		
Pollutant	Emissions (TPY)[a]	
	2,500 hr/yr	8,760 hr/yr
PM	5.5	31.2
PM_{10}	3.2	17.8
$PM_{2.5}$	0.6	3.9
[a] Emissions based on using controls to abate fugitive dust emissions.		

Total GHG emissions on a CO_2e basis using the global warming potential (GWP) of the GHG are shown in the table below.

Table 1 - GHG EMISSIONS							
Power (HP)	Gal/hr	Diesel #2 [a] MMBtu/hr	GHG	Emission Factor [b] (kg/MMBtu)	GWP	CO_2e Emissions (MTPY)	CO_2e Emissions (TPY)
1,385	68.3	9.43	CO_2	73.96	1	1,742.76	1,921.06
			CH_4	3.0E-03	25	1.77	1.95
			N_2O	6.0E-04	298	4.21	4.64
429	24.2	3.34	CO_2	73.96	1	617.49	680.67
			CH_4	3.0E-03	25	0.63	0.69
			N_2O	6.0E-04	298	1.49	1.65
					Total CO_2e	2,368.33	2,610.65
a. Based on gallons of diesel per hour at 0.138 MMBtu/gal b. Emission Factors determined from EPA document Emission Factors for Greenhouse Gas Inventories.							

Total previous and modification emissions are summarized in the table below.

Total Facility Emissions (TPY)				
Pollutant	Previous Emissions (With Limits)[a]	Previous Emissions (No Limits)	Modification Emissions (With Limits)[a]	Modification Emissions (No Limits)
CO	9.9	34.7	3.94	13.8
NO_X	37.4	131.0	18.3	64.1
SO_2	6.0	21.0	0.0064	0.023
PM	27.9	109.7	0.43	1.51
PM-10	11.1	45.5	0.42	1.45
PM-2.5	2.6	11.0	0.39	1.36
VOC	1.1	3.9	1.49	5.23
HAPs	0.018	0.063	0.027	0.093
[a] 2,500 hrs/yr				

Total facility emissions are summarized in the table below.

Total Facility Emissions and Trigger Levels (TPY)					
Pollutant	Total Emissions (With Limits)[a]	Total Emissions (No Limits)	AERR Threshold	DOH Level	Storage Pile Wind Erosion
CO	13.8	48.5	1000	250	0
NO_X	55.7	195.1	100	25	0
SO_2	6.0	21.0	100	25	0
PM	27.9	111.2	-	25	21.2
PM-10	11.5	57	100	25	6.8
PM-2.5	3.0	12.4	100	-	0.9
VOC	2.6	9.1	100	25	0
HAPs	0.05	0.2	-	5	0
[a] 2,500 hrs/yr					

AIR QUALITY ASSESSMENT

An ambient air quality impact analysis (AAQIA) is generally required for new or modified sources to demonstrate compliance with State and National ambient air quality standards. On a case-by-case basis the Department may not require an AAQIA for temporary sources provided the following:

1. The anticipated length of stay at any one location is less than one (1) year;
2. The temporary source is not a major source or part of a major source; and
3. The location of the temporary source is generally in a remote area where nuisance impacts are not expected.

An AAQIA will not be required for the 429 HP diesel engine generator since the engine meets the above conditions. The Department may at any time perform or require the applicant to perform an AAQIA for this facility.

SIGNIFICANT PERMIT CONDITIONS

a. The total operating hours of the sand plant, as represented by the total combined operating hours of the diesel engine generators powering the fixed sand plant, shall not exceed 2,500 hours in any rolling twelve-month (12-month) period.

b. The total combined operating hours of the 500 TPH portable screening plants shall not exceed 2,500 hours in any rolling twelve-month (12-month) period.

c. The total operating hours of the temporary 429 HP diesel engine generator shall not exceed 2,500 hours in any rolling twelve-month (12-month) period.

Reason for a, b, and c. These conditions were incorporated into the permit based on what the applicant proposed for the facility. The limits are required for compliance with the air standards. The limits are also required to keep the facility from exceeding the major source thresholds for the applicable pollutants. An hour meter will be required for each plant to monitor the operating hours.

d. Sulfur content not to exceed 0.0015 for diesel engine generators.

Reason for d. This condition was incorporated into the permit due to fuel requirements for Subpart ZZZZ and Nonroad engines.

9. Conclusion and Recommendation:

Actual emissions from this facility should be lower than estimated. Maximum potential emissions were based on worst-case conditions assuming maximum rated capacity of the diesel engine generators and processing plant equipment. Calculations were also based on 2,500 hr/yr operation of the crushing and screening plants. However, processing by the plants will be on a temporary basis with intermittent periods of operation, contingent upon jobs performed. The permit requires the use of a water spray systems for compliance with state and federal fugitive emissions limits. Recommend issuance of the covered / temporary covered source permit subject to the incorporation of the significant permit conditions.

June 26, 2015
Joseph Baumgartner